

## Claims

What is claimed is:

- 5 1. A low cross talk electrical signal transmission assembly having a signal transmission medium and further comprising:
  - a first signal pair having a first conductor and a second conductor;
  - a second signal pair having a third conductor and a fourth conductor;
  - a first input signal having the first conductor attached thereto;
  - 10 a second input signal having the second conductor attached thereto;
  - a third input signal having the third conductor attached thereto;
  - a fourth input signal having the fourth conductor attached thereto;
  - a first compensation line attached to the first input signal; and
  - a second compensation line attached to the third input signal and
  - 15 intertwined with the first compensation line to create a first compensation line assembly having capacitive and inductive coupling.
- 20 2. The low cross talk electrical signal transmission assembly of claim 1, further comprising a fifth conductor having a first end connected to the first input signal and a second end attached to the first compensation line.
- 25 3. The low cross talk electrical signal transmission assembly of claim 1, wherein the first conductor and the third conductor are ring conductors and the second conductor and the fourth conductor are tip conductors.
4. The low cross talk electrical signal transmission assembly of claim 1, wherein the first conductor and the third conductor are tip conductors and the second conductor and the fourth conductor are ring conductors.
- 30 5. The low cross talk electrical signal transmission assembly of claim 1, wherein the signal transmission medium is a circuit board.
6. A low cross talk electrical signal transmission assembly comprising:

a transmission medium having a first side and a second side;  
a first signal pair having a first conductor positioned on the second side and  
a second conductor positioned parallel to the first conductor on the first side;  
a second signal pair having a third conductor positioned on the first side  
and a fourth conductor positioned parallel to the third conductor on the second side;  
a first input signal having the first conductor attached thereto;  
a second input signal having the second conductor attached thereto;  
a third input signal having the third conductor attached thereto;  
a fourth input signal having the fourth conductor attached thereto;  
a first compensation line attached to the first input signal; and  
a second compensation line attached to the third input signal and  
intertwined with the first compensation line to create a first compensation line assembly  
parallel to and flanked by the second conductor and fourth conductor with capacitive and  
inductive coupling.

7. The low cross talk electrical signal transmission assembly of claim 6, further  
comprising a third compensation line attached to the fourth input signal and a fourth  
compensation line attached to the second input signal and intertwined with the third  
compensation line to create a second compensation line assembly parallel to and adjacent  
to the second conductor with capacitive and inductive coupling.

8. The low cross talk electrical signal transmission assembly of claim 6, further  
comprising a fifth conductor having a first end connected to the first input signal and a  
second end attached to the first compensation line.

9. The low cross talk electrical signal transmission assembly of claim 6, wherein the  
first conductor and the third conductor are ring conductors and the second conductor and  
the fourth conductor are tip conductors.

10. The low cross talk electrical signal transmission assembly of claim 6, wherein the  
first conductor and the third conductor are tip conductors and the second conductor and  
the fourth conductor are ring conductors.

11. The low cross talk electrical signal transmission assembly of claim 6, wherein the signal transmission medium is a circuit board.

12. A low cross talk electrical signal transmission assembly comprising:

5 a transmission medium having a first side and a second side;  
a first signal pair having a first conductor positioned on the second side and  
a second conductor positioned parallel to the first conductor on the first side;  
a second signal pair having a third conductor positioned on the first side  
and a fourth conductor positioned parallel to the third conductor on the second side;  
10 a first input signal having the first conductor attached thereto;  
a second input signal having the second conductor attached thereto;  
a third input signal having the third conductor attached thereto;  
a fourth input signal having the fourth conductor attached thereto;  
a first compensation line attached to the first input signal on the first side;

15 and

a second compensation line attached to the third input signal on the first  
side and intertwined with the first compensation line to create a first compensation line  
assembly parallel to and flanked by the second conductor and fourth conductor with  
capacitive and inductive coupling; and

20 a third compensation line attached to the fourth input signal on the first side; and  
a fourth compensation line attached to the second input signal on the first side and  
intertwined with the third compensation line to create a second compensation line  
assembly parallel to and adjacent to the second conductor with capacitive and inductive  
coupling.

25 13. The low cross talk electrical signal transmission assembly of claim 12, further  
comprising:

a third signal pair having a fifth conductor positioned on the second side  
and a sixth conductor positioned on the first side; and

30 a fourth signal pair having a seventh conductor positioned on the first side  
and an eighth conductor positioned on the second side, the fifth conductor positioned  
parallel to the seventh conductor and the eighth conductor positioned parallel to the sixth  
conductor.

14. The low cross talk electrical signal transmission assembly of claim 13, wherein the fifth conductor and the eighth conductor on the second side are flanked by the first conductor and the fourth conductor and the first conductor and sixth conductor of the first side are flanked by the second conductor and third conductor.

15. The low cross talk electrical signal transmission assembly of claim 12, further comprising:

a third compensation line attached to the first input signal on the second side;

a fourth compensation line attached to the third input signal on the second side and intertwined with the third compensation line to create a third compensation line assembly parallel to and flanked by the first conductor and fourth conductor and parallel to the first compensation line with capacitive and inductive coupling;

a fifth compensation line attached to the fourth input signal on the second side; and

a sixth compensation line attached to the second input signal on the second side and intertwined with the fifth compensation line to create a fourth compensation line assembly parallel to and adjacent to the first conductor and parallel to the second compensation line with capacitive and inductive coupling.

16. The low cross talk electrical signal transmission assembly of claim 12, further comprising a ninth conductor having a first end connected to the first input signal and a second end attached to the first compensation line.

17. A method of reducing cross talk between two pairs of conductors extending from a first connector and across a substrate to a second connector, the method comprising:

arranging selected ones of the conductors on the substrate adjacent to each other for coupling their respective electrical signals to each other and;

connecting at least one pair of mutually insulated intertwined conductors to one end of a pair of selected ones of the conductors extending across the substrate, the mutually intertwined conductors having a connected end being in electrical contact with the selected ones of the conductors and a free end opposite the connected end.